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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/722,607

11/28/2003

Masato Akita

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04/05/2007

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
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ALEXANDRIA, VA 22314

EXAMINER

MERCADO, JULIAN A

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
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3 MONTHS

04/05/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/05/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/722,607

Applicant(s)

AKITA ET AL.

Examiner

Julian Mercado

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 5-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2003-11-28</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Claims 4-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Applicant timely traversed the restriction (election) requirement in the reply filed on January 12, 2007.

Applicant's election with traverse of claims 1-3 in the reply filed on January 12, 2007 is acknowledged. The traversal is on the ground(s) that the claims of the present application would have to be searched in a handful of subclasses and the benefit of electronic searching would allow for all subclasses to be made without substantial additional effort. This is not found persuasive because the inventions as claimed are not obvious variants and a burden does exist to search all pending claims; each invention as claimed would require a separate search strategy via appropriate class and subclass search and keyword searching that is unique for each claimed invention. Accordingly, it is necessary to search for one of the inventions in a manner that is not likely to result in finding art pertinent to the other inventions. The examiner thus disagrees with applicant's characterization of the search required of the present claims as merely being in "a handful of sub-classes" and asserts that a different field of search exists.

The requirement is still deemed proper and is therefore made FINAL.

The examiner notes that claim 4, while not elected by applicant, appears to be co-extensive in scope with claim 3. Thus, claim 4 will be examined along with elected claims 1-3.

Art Unit: 1745

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The Japanese documents cited in the November 28, 2003 Information Disclosure Statement have not been considered by the examiner as citation of these documents without its accompanying translation, English-language abstract or statement of relevance is not in compliance with MPEP 609. Applicant is requested to provide these related documents for the examiner's consideration.

The examiner acknowledges the "LIST OF RELATED CASES" submitted on May 6, 2004.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 4 recite a variable $Zb_{r,m}$, but this variable is not found in either of formulas (1) or (2). Thus, the scope of the claims cannot be ascertained as this variable is undefined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Watkins et al. (U.S. Pat. 4,988,583).

At the outset, the examiner notes that claims 1 and 3 are similar in scope with exception to claim 1 designating the first flow path for the anode and the second flow path for the cathode, while claim 3 designates the first flow path for the cathode and the second flow path for the anode. Regarding claims 1 and 3, Watkins et al. teaches a direct type liquid fuel cell power generator such as that pioneered by General Electric, which uses methanol as a fuel. See col. 6 line 23 et seq. and col. 1 line 55 et seq. The fuel cell comprises an electromotive portion unit (Figure 1) formed by sandwiching an electrolyte film [20] between an anode electrode [16] including an anode catalyst layer and a cathode electrode [18] including a cathode catalyst layer. See col. 3 line 66 et seq. Both electrodes invariably include a catalyst layer. See col. 1 lines 50-52. The anode comprises a first flow path plate [15] having formed thereon a first flow path [22] which is disposed in abutment with the anode electrode of the electrode portion unit group and through which a fuel flows, “[t]he fluid opening is connected to a source of fuel (not shown) for the plate adjacent the anode....” See col. 4 lines 38-39. Similarly, the cathode also comprises a second flow path plate having formed thereon a second flow path which is disposed in abutment with the cathode electrode of the electrode portion unit group and through which an oxidizing

Art Unit: 1745

agent flows, “[the fluid opening is connected to a source of... oxidant (not shown) for the plate adjacent the cathode.” See col. 4 lines 38-41.

As to the fuel cell comprising a plurality of electromotive portion units, Watkins et al. teaches “multi-cell arrangements” such that bipolar plates “supply the fuel gas to the anode of one cell and the oxidant gas to the cathode of *the adjacent cell*.” (emphasis added) See col. 7 lines 9-14. Accordingly, the plurality of cells define an electromotive portion unit group.

As to the first flow path passing so as to come into contact with all anode electrodes of the electromotive portion unit group without branching from an inlet thereof to an outlet and being formed so as to come into contact with an anode electrode of at least one electromotive portion unit a plurality of times, Figure 2 shows that the flow paths follow a serpentine path and are specifically disclosed as being a “single continuous channel”. See col. 4 lines 44-47 and col. 5 line 39 et seq.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. (U.S. Pat. 4,988,583).

The teachings of Watkins et al. are discussed above.

Notwithstanding the rejection of claims 2 and 4 for the reasons set forth under 35 U.S.C. 112, second paragraph (discussion above), the formulas (1) and (2) are understood to call for the following variables: “h” for the number of flow paths which is a product of “n” and “s” which satisfy $1 \leq m \leq n$, $1 \leq r \leq s$, and “ b_{r+m} ” being an assigned number equal to or smaller than “h”. Accordingly, these variables are deemed a function of the number of flow path regions, while variable “ $Zb_{r,m}$ ” further defining a distance and variable L_0 further defining a length. In col. 4 lines 35-44, Watkins et al. teach a “plurality of alternating longer and shorter closely spaced passes...” which correspond to a number of flow path regions. That the patentees specifically disclose *longer* and *shorter* closely spaced passes is considered to teach, or at least suggest to one skilled in the art, varying predetermined distances including the supply port as the starting point, as well as distances inclusive of the discrete lengths of each flow path region. Watkins et al. further disclose that other dimensions, such as the width and depth of the flow channels, may be varied in accordance with preferred ranges. Thus, absent of unexpected results, it is asserted that the dimensions of the flow paths as may be represented by formulas (1) and (2) are optimizable parameters for a result-effective variable. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) See col. 5 line 25 et seq., where the patentees specifically teach that the “dimensions represent a compromise between electrochemical performance and the mechanical strength requirements for supporting the electrodes.”

Art Unit: 1745

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

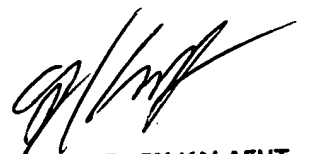
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Julian Mercado



STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP 1700